

National Oceanic and Atmospheric Administration



- Natural Resources
- Natural Disaster Reduction

Enabling Legislation

The National Oceanic and Atmospheric Administration (NOAA) was established by Reorganization Plan Number 4 of 1970, which became effective on October 3, 1970. The reorganization plan transferred to the Secretary of Commerce various functions relating to oceans and atmosphere, including commercial fishery functions. NOAA's programs and activities are authorized by a number of permanent organic acts and a variety of statutes including:

- The National Weather Service Organic Act
- The National Sea Grant College Program Act
- The Marine Mammal Protection Act
- The Endangered Species Act
- The Magnuson-Stevens Fishery Conservation and Management Act
- The Coast and Geodetic Survey Act
- The Coastal Zone Management Act

Bureau Context

The National Oceanic and Atmospheric Administration's mission is to describe and predict changes in the Earth's environment, and conserve and manage wisely the Nation's coastal and marine resources to ensure sustainable economic opportunities. NOAA conducts research to develop new technologies, improve operations, and supply the scientific basis for managing natural resources and solving environmental problems. NOAA's comprehensive system for acquiring observations - from satellites to radars to ships and submersibles - provides the quality data and information needed for the safe conduct of daily life and the basic functioning of modern society. Common products and services include weather and climate warnings and forecasts, environmental technologies, marine fisheries statistics and regulations, nautical charts, assessments of environmental changes, and hazardous materials response information. These capabilities, products, and services support the domestic security and global competitiveness of the United States, and affect the lives of nearly every citizen today.

NOAA's FY 2000 budget request affirms the agency's role by providing the resources to maintain essential services, facilitate progress in key investment areas of national interest, and address statutory obligations. This proposed budget ensures an appropriate balance among the environmental assessment, prediction, and stewardship needs of the Nation. For FY 2000, NOAA requests \$2.5 billion and 12,720 FTE to manage natural resources and provide assessment and prediction of the Earth's environment.

NOAA efforts are key components of the Department of Commerce strategic plan and will contribute significantly to achieving the three DOC strategic themes.

Priorities and Initiatives

Natural Resources - NOAA will work to reduce overfishing and overcapitalization of the Nation's fishery resources; better manage the crisis of salvaging protected resources; protect coastal habitats from continued loss and degradation; conduct more research into the effects of climate changes on the oceans and atmosphere; and promote safe navigation.

Natural Disaster Reduction - NOAA contributes to this initiative by providing weather warnings and forecasts to the general public via the National Weather Service by acquiring and processing hydrometeorological, ocean, and space-based observations, conducting weather and climate research as well as maintaining historical environmental data and making it available to public and private concerns.

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DOC Strategic Themes and NOAA Goals :

1. *Build for the future and promote U.S. competitiveness in the global marketplace by strengthening and safeguarding the Nation's economic infrastructure.*
 - Advance Short-Term Warning and Forecast Services
 - Promote Safe Navigation
2. *Keep America competitive with cutting-edge science and technology and an unrivaled information base.*
 - Implement Seasonal to Interannual Climate Forecasts
 - Predict and Assess Decadal to Centennial Change
3. *Provide effective management and stewardship of our Nation's resources and assets to ensure sustainable economic opportunities.*
 - Build Sustainable Fisheries
 - Recover Protected Species
 - Sustain Healthy Coasts

The challenge of investing strategically in the Nation's future is accompanied by the requirement to be more effective, to identify and realize opportunities for savings, and to focus the effects of government on what matters to people. NOAA envisions a 21st century in which environmental stewardship, assessment, and prediction serve as keystones to enhancing economic prosperity and quality of life, better protection of lives and property, and strengthening of the U.S. balance of trade. This vision depends on NOAA actions that:

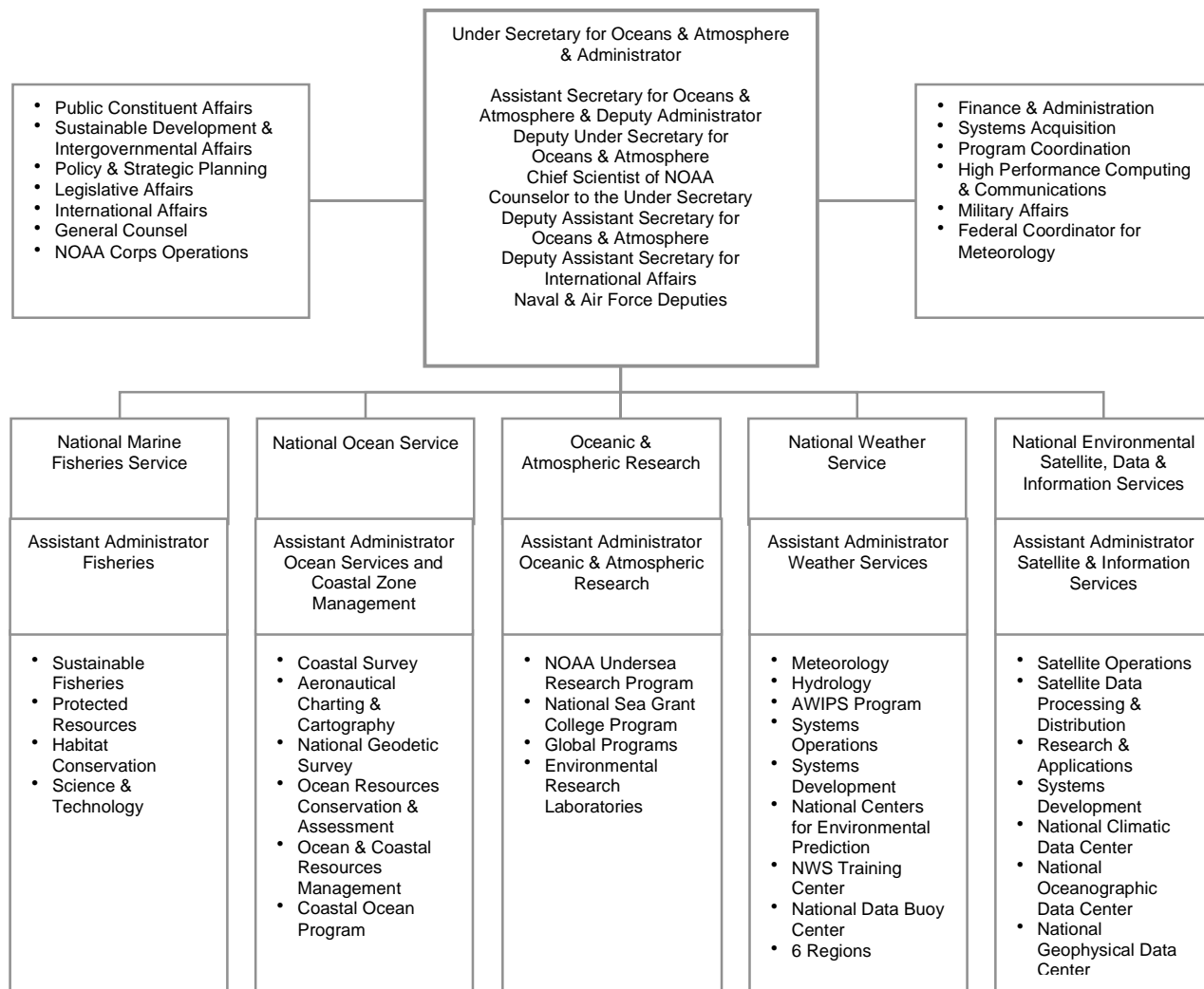
- Create and disseminate reliable assessments and predictions of weather, climate, space environment, ocean and living marine resources, nautical and geodetic phenomena and systems.
- Implement integrated approaches to environmental management and ocean and coastal resources development for economic and social health.
- Ensure continuous operational observing capabilities -- including buoys, satellites, ships, submersibles, and radars.
- Build and use new information networks including investing in state-of-the-art computing capabilities.
- Develop public-private, interagency, and international partnerships for the expansion, transfer, and archiving of environmental knowledge and technologies.
- Invest in scientific research and the development of new technologies to improve current operations and prepare for the future.
- Improve NOAA's abilities to serve its customers and forge stronger ties with its partners and stakeholders.

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Organizational Structure



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Measures and Targets Summary

Measure	FY 2000 Target
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Goal: Advance Short-Term Warning and Forecast Services

Increase lead time (minutes) and accuracy (%) for severe weather warnings for Tornadoes	12 min 70% accuracy
Increase lead time (minutes) and accuracy (%) for severe weather warnings for Flash Floods	46 min 86% accuracy
Increase lead time (minutes) and accuracy (%) for severe weather warnings for Severe Thunderstorms	20 min 85% accuracy
Increase accuracy (km/mi) of warnings within 24 hours of Hurricane landfall	130km/ 81 mi
Increase lead time (days in advance) for successfully forecasting one inch of precipitation	2.4 days
Increase accuracy (%) of correct forecasts for heavy Snowfall	60%
Increase the accuracy (in degrees F) of Temperatures averaged for all forecasts periods and cycles	Correct: 87% Freezing: 80%

Goal: Implement Seasonal to Interannual Climate Forecasts

ENSO Forecasts – Accuracy (correlation)	0.85
U.S. temperature – skill score (see p. III - 76 for definition)	20
New and improved data sets developed and produced (number per year)	6
Global Ocean-Atmosphere-Land System (GOALS) experiments implemented (%)	25%

Goal: Predict and Assess Decadal to Centennial Change

Document the “turnover” of CFC source gases (whose atmospheric abundance is expected to begin decreasing in 1998) in order to verify the effectiveness of global policy actions	N/A
Publish updated trend results of air quality measurements	N/A
Lead development of peer-reviewed initial assessment of regional ozone in North America, including summarizing results for customers	N/A

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Measures and Targets Summary, cont.

<u>Measure</u>	<u>FY 2000 Target</u>
Goal: Promote Safe Navigation	
Number of Physical Oceanographic Real-Time Systems (PORTS) in place to provide quality-assured data in real-time for safe navigation	7
Percent reduction in the backlog (square nautical miles) of hydrographic surveys for critical areas (cumulative)	22.5%
Goal: Build Sustainable Fisheries	
By 2004, 50% fewer overfished fisheries (currently 86 of 286 stocks are overfished. This would be reduced to 43.)	0%
By 2004, 60% of stocks have sufficient essential fish habitat	50%
By 2004, 10% increase in employment in non-capture fishing and other sectors in fishing communities	0%
By 2004, 20% increase in economic contribution of aquaculture to Gross Domestic Product (GDP)	4%
Goal: Recover Protected Species	
Number of recovery plans developed (cumulative)	27
Number of recovery plans priority activities implemented (annual)	20
Number of species with status improved (annual)	16
Number of investigations of human-induced and other sources of mortality (annual)	15
Cooperative conservation programs implemented (cumulative)	10
Goal: Sustain Healthy Coasts	
Number of U.S. coastal regions with reduced introductions and impacts of nonindigenous species (total of 6 regions)	1
Percent of U.S. coastline with threats to habitat assessed and ranked	20%
Number acres of coastal habitat restored (cumulative)	88,000
Percent of state coastal nonpoint pollution control programs approved (% of 35 coastal states)	86%
Number of U.S. coastal regions with systems to predict and reduce impacts of harmful algal blooms (total of 6)	1
Percent of U.S. shoreline and inland areas with improved ability to identify extent and severity of coastal hazards	20%

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Resource Requirements Summary



\$2.5 billion



12,726 FTEs

Skills: Meteorologists, Hydrologists, Engineers, Oceanographers, Physical Scientists, Atmospheric Scientists, Computer Specialists, Chemists, Physicists, Mathematicians, Cartographers, Fishery Biologists, Fishery Economists, Ecologists, Marine Ecologists, Toxicologists



IT Requirements: The following represents some of the major NOAA IT system requirements for FY 2000:

- Advanced Weather Interactive Processing System (AWIPS): \$60.5 M
- Next Generation Weather Radar (NEXRAD) System: \$48.9M
- Geostationary Operational Environmental Satellites (GOES) Ground System: \$6M
- Geophysical Fluid Dynamics Laboratory (GFDL): \$5.7M
- Geodetic Support System: \$19.8M
- National Marine Fisheries Service Fishing Information Technology System: \$25M

National Oceanic and Atmospheric Administration

Advance short-term warning and forecast services

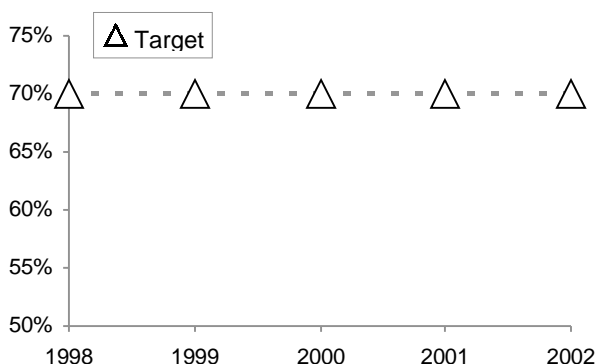
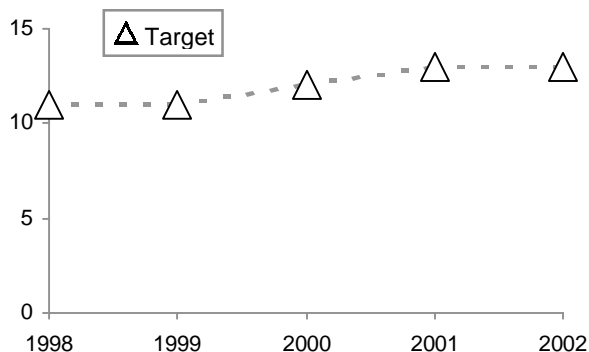


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Rationale for/Comments on Performance Goal:

Significantly improved short-term warning and forecast products and services enhance public safety, through the protection of life and property, and the economic productivity of the Nation. They also enhance NOAA's ability to observe, understand, and model the environment, and effectively disseminate products and services to users.

Measure: Increase lead time (minutes) and accuracy (%) for severe weather warnings through verification statistics for Tornadoes



Data Validation and Verification

Data source: National Weather Service (NWS) Field Offices

Frequency: Annual

Baseline: Progress based on the previous year

Data storage: National Weather Service Headquarters, Office of Meteorology, Silver Spring, MD

Verification: Verification is the process of comparing the predicted weather to the actual outcome. The process begins with the collection of warning and the corresponding observational data from every NWS office across the Nation. Quality control procedures are followed to ensure the highest possible reliability of the gathered data.

Comment: The Customer Service Core of the NWS Office of Meteorology is responsible for the validation and verification activities. There are limitations of scientific verification in assessing data. The fundamental purpose of scientific verification is to objectively assess program performance through the use of standard statistical analysis. However, a number of factors unique to the atmospheric sciences must be considered to ensure proper interpretation of objectively derived statistics. The primary factor to consider is the natural variation of this performance measure related to annual fluctuations in meteorological conditions associated with severe weather. Outyear measures are dependent on a stable funding profile and take into account improved use of the Weather Surveillance Radar (WSR-88D), new satellites, improved forecast models, new and continued U.S. Weather Research Program (USWRP) research activities, investments in critical observing systems, and implementation of the Advanced Weather Interactive Processing System (AWIPS).

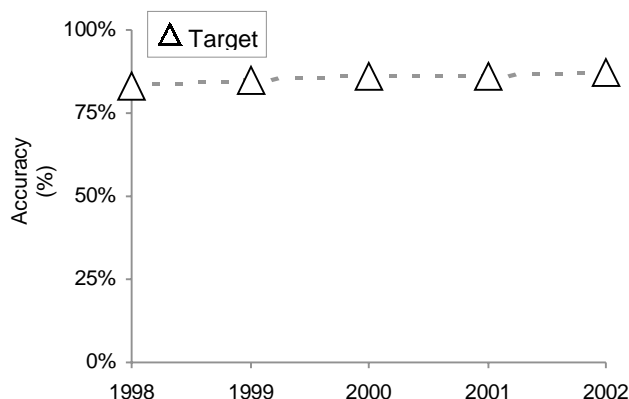
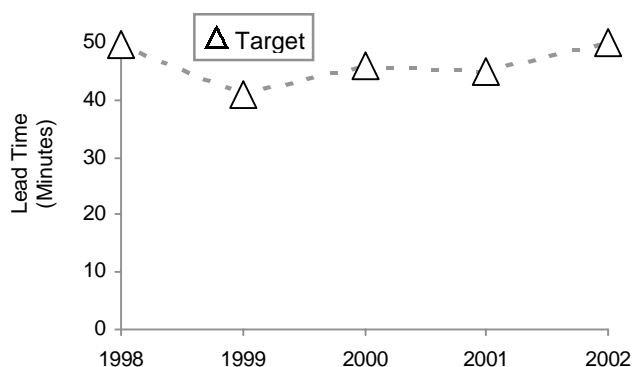
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Advance short-term warning and forecast services (cont.)



Natural
Disaster
Reduction

Measure: Increase lead time (minutes) and accuracy (%) for severe weather warnings for Flash Floods



Data Validation and Verification

Data source: National Weather Service Field Offices

Frequency: Annual

Baseline: Progress is based on previous year

Data storage: National Weather Service Headquarters, Office of Meteorology, Silver Spring, MD

Verification: Verification is the process of comparing the predicted weather to the actual outcome. The process begins with the collection of warning and the corresponding observational data from every NWS office across the Nation. Quality control procedures are followed to ensure the highest possible reliability of the gathered data.

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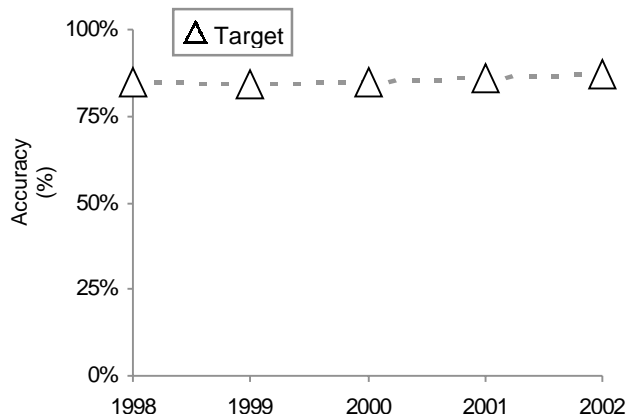
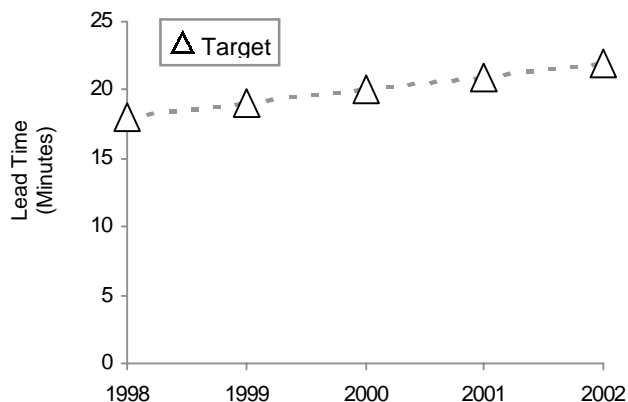
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Advance short-term warning and forecast services (cont.)



Natural
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Reduction

Measure: Increase lead time (minutes) and accuracy (%) for severe weather warnings for Severe Thunderstorms



Data Verification and Validation

Data source: National Weather Service Field Offices

Frequency: Annual

Baseline: Progress is based on previous year

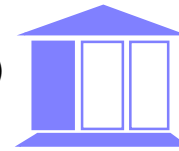
Data storage: National Weather Service Headquarters, Office of Meteorology, Silver Spring, MD

Verification: Verification is the process of comparing the predicted weather to the actual outcome. The process begins with the collection of warning and the corresponding observational data from every NWS office across the Nation. Quality control procedures are followed to ensure the highest possible reliability of the gathered data.

Comment: The Customer Service Core of the NWS Office of Meteorology is responsible for the validation and verification activities. There are limitations of scientific verification in assessing data. The fundamental purpose of scientific verification is to objectively assess program performance through the use of standard statistical analysis. However, a number of factors unique to the atmospheric sciences must be considered to ensure proper interpretation of objectively derived statistics. The primary factor to consider is the natural variation of this performance measure related to annual fluctuations in the meteorological conditions associated with severe weather. Outyear measures are dependent on a stable funding profile and take into account improved use of the WSR-88D, new satellites, improved forecast models, new and continued research activities of the USWRP, investments in critical observing systems, and implementation of AWIPS.

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Advance short-term warning and forecast services (cont.)



Natural
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Measure: Increase accuracy (km/mi) of warnings within 24 hours of Hurricane landfall

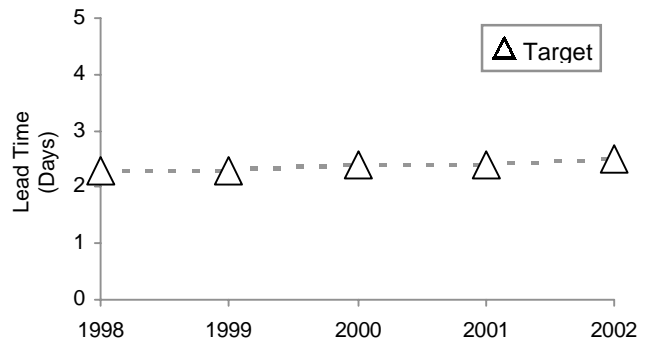
— Accuracy —

Year	1998	1999	2000	2001	2002
Km.	131	135	130	130	125
Mi.	82	84	81	81	78

Data Validation and Verification

Data source: National Hurricane Center (NHC)
Frequency: Annual
Baseline: Established baseline for 24 hour track error in 1993.
Data storage: NHC/Tropical Prediction Center, Miami, FL
Verification: Hurricane storm verification is performed for hurricanes, tropical storms, and tropical depressions and considered whether over land or water. The NHC issues warning when hurricane conditions are expected along the coast within 24 hours. The location and timing of these warnings are based upon a number of factors, including the official NHC track forecast. The average errors of the NHC track forecast for the Atlantic basin are calculated at the end of each hurricane season.
Comment: Documentation for Hurricane Warnings is published in the Atlantic Hurricane Summary published at the end of the hurricane season which ends November 30. Other source documentation to justify performance measure are typically charts/briefings on performance, Special Climate Summary press releases, and NOAA reports. There is large variability in the hurricane warning program due to sample sizes and types of storms each year. There may be years with unusually easy or difficult forecasts. Outyear measures are dependent on a stable funding profile and take into account improved use of the WSR-88D, new satellites, improved forecast models, new and continued research activities of the USWRP, investments in critical observing systems, and implementation of AWIPS.

Measure: Increase lead time (days in advance) for successfully forecasting one inch of precipitation



Data Validation and Verification

Data source: Hydrometeorological Prediction Center (HPC)
Frequency: Annual
Baseline: Established 24 hour forecast baseline in 1971.
Data storage: World Weather Building, Camp Springs, MD
Verification: HPC has produced the Quantitative Precipitation Forecast (QPF) since the early 1960s and has kept verification statistics related to the QPF program since that time. All data is examined for accuracy and quality control procedures are applied.
Comment: The NWS routinely prepares and distributes to internal and external customers predictions of heavy rainfall. The HPC has the responsibility to prepare both graphical and text products depicting the areas threatened by heavy precipitation in the contiguous United States. There will be a significant amount of variability and the improvements may not be achieved exactly as predicted. Outyear measures are dependent on a stable funding profile and take into account improved use of the WSR-88D, new satellites, improved forecast models, new and continued research activities of the USWRP, investments in critical observing systems, and implementation of AWIPS.

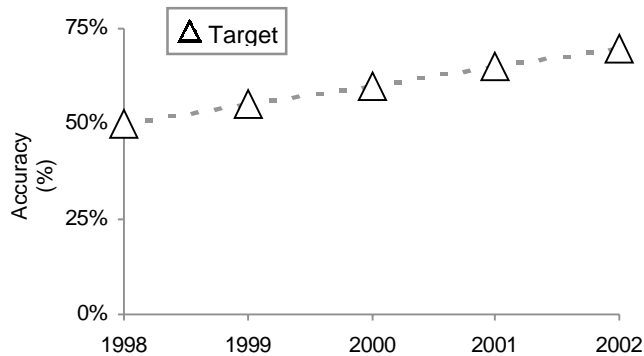
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Advance short-term warning and forecast services (cont.)



Natural
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Reduction

Measures: Increase accuracy (%) of correct forecasts for heavy Snowfall



Data Validation and Verification

Data source:	National Weather Service Field Offices
Frequency:	Annual
Baseline:	3-year moving average.
Data storage:	National Weather Service Headquarters, Office of Meteorology, Silver Spring, MD
Verification:	Verification is the process of comparing the predicted weather to the actual outcome. The process begins with the collection of forecasts and the corresponding observational data from every NWS office across the Nation. Quality control procedures are followed to ensure the highest possible reliability of the gathered data.
Comment:	Forecast accuracy for heavy snowfall is defined as the percent of correct forecasts for all snowfall events of 4 inches or more, over a 24 hour period. Documentation for heavy snowfall is printed annually. Due to the relatively few number of cases each year, the projections assume a 3-year average (current plus 2 previous years equally weighted). Due to the large volume of data gathered and computed, a document for the above cannot be finalized until well into the following fiscal year. Outyear measures are dependent on a stable funding profile and take into account improved use of the WSR-88D, new satellites, improved forecast models, new and continued research activities of the USWRP, investments in critical observing systems, and implementation of AWIPS.

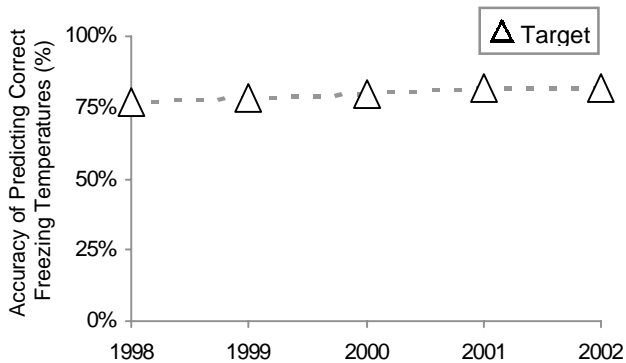
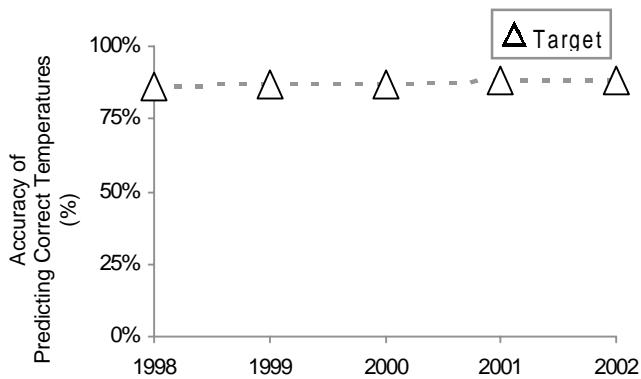
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Advance short-term warning and forecast services (cont.)



Natural
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Reduction

Measure: Increase the accuracy (in degrees F) of temperatures averaged for all forecast periods and cycles



Data Validation and Verification

Data source: National Weather Service Field Offices
Frequency: Annual
Baseline: Progress is based on previous year.
Data storage: National Weather Service Headquarters, Office of Meteorology, Silver Spring, MD

Verification: Verification is the process of comparing the predicted weather to the actual outcome. The process begins with the collection of forecasts and the corresponding observational data from every NWS office across the Nation. Quality control procedures are followed to ensure the highest possible reliability of the gathered data.

Comment: The performance measure involves two types of temperature forecasts: the percentage of correct temperature forecasts and the forecast accuracy of the onset of freezing temperatures. The correct temperature forecasts are defined as those whose absolute errors differ by 5F or less averaged for all forecast periods and cycles. The forecast accuracy of freezing temperatures is defined as the frequency that a minimum temperature of 32F (0C) or less was correctly forecast when the previous day's minimum temperature was 40F or more. Data is based on the 12Z cycle forecast (24hr period) and the 00Z cycle forecast (36hr projection) for the overnight minimum temperature. Documentation for temperature verification is printed annually. Due to the large volume of data gathered and computed, documentation for the above cannot be finalized until well into the following fiscal year. Outyear measures are dependent on a stable funding profile and take into account improved use of the WSR-88D, new satellites, improved forecast models, new and continued research activities of the USWRP, investments in critical observing systems, and implementation of AWIPS.

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Advance short-term warning and forecast services (cont.)



Natural
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Means and Strategies

Means or Activity	Strategy or Rationale
Sustain modernized weather service operations.	Our increased understanding of the environment through research and investments in new technologies has provided more accurate and timely weather warnings and forecasts required by the Nation.
Maintain continuous operational satellite coverage critical for warnings and forecasts.	Satellites positioned over the United States provide uniform coverage with visible and infrared (day and night) imagery. Satellite coverage is combined with and complements data from other systems to form a complete set of information about the space from the Earth's surface to the upper atmosphere.
Strengthen observing and prediction systems through scientific, technological and programmatic advances, and international cooperation.	The environment has profound effects on human welfare and economic well-being. NOAA is committed to improving its observing systems, developing a better understanding of natural processes, and enhancing its predictive models and dissemination systems.
Improve customer service to the public, emergency managers, the media, and private forecast planners through effective communication and utilization of NOAA's products.	Effective communication and dissemination are critical to the users of weather forecasts, warnings, and other products. These are accomplished through the utilization of telecommunication systems and external outreach.

National Oceanic and Atmospheric Administration

Advance short-term warning and forecast services (cont.)



Natural
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Crosscutting Activities

- Weather and climate services are provided to the public and industry through a unique partnership between NOAA and the private meteorological sector. NOAA provides forecasts and warnings for public safety, and the private sector promotes dissemination of forecasts and the tailoring of basic information for business uses.
- NOAA works closely with other DOC bureaus, such as *NIST* and *EDA*, and other agencies such as FEMA, the Corps of Engineers, the Bureau of Reclamation, and others as well as state and local governments to participate in the Federal Natural Disaster Reduction initiative which is focused on reducing the costs of natural disasters and saving lives through improved warnings and forecasts and the provision of information to improve resiliency to disaster.
- NOAA works very closely with DoD, especially the Air Force, to complement DoD meteorological services in the interest of national security. NOAA also works directly with FAA on aviation forecasts and with NASA on launch forecasts and solar forecast effects.

Resource Requirements



\$1.3 Billion



6,156 FTEs

Skills: Meteorologists, Hydrologists, Electronic Technicians, Hydrometeorological Technicians, Engineers, Oceanographers



IT Requirements:

- Advanced Weather Interactive Processing System: \$60.5M
- Next Generation Weather Radar (NEXRAD) System: \$48.9M
- Geostationary Operational Environmental Satellites (GOES) Ground System: \$6M
- Automated Surface Observing System (ASOS): \$11.75

Program Evaluation Efforts

- Program evaluations at NWS field offices are conducted annually.
- Quality control procedures are also followed to ensure the highest possible reliability of gathered data and weather products.
- The National Academy of Sciences is also involved in program analysis and evaluation processes on a national level.

National Oceanic and Atmospheric Administration

Implement seasonal to interannual climate forecasts



- Natural Resources
- Natural Disaster Reduction

Rationale for/Comments on Performance Goal:

NOAA works with academic and multinational partners to provide one-year lead-time forecasts of known skill of global climate variability, especially El Niño, and consequent precipitation and surface temperature distributions. These forecasts increase society's ability to mitigate economic losses and social disruption.

Measure: ENSO (El Niño/Southern Oscillation) Forecasts - Accuracy (correlation)

— Accuracy —

Year	1998	1999	2000	2001	2002
Correlation	.85	.85	.85	.85	.85

Data Validation and Verification

Data source: Forecasts of sea surface temperature in a portion of the Pacific Ocean, and observations from buoys, ships, and satellites.

Frequency: Annual

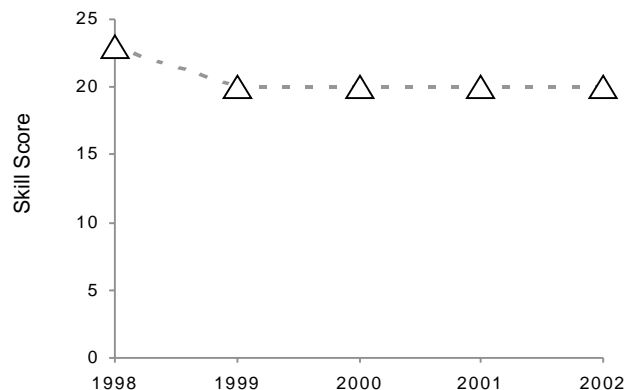
Baseline: 1997: .81 correlation

Data storage: National Weather Service's National Centers for Environmental Prediction, Camp Springs, MD

Verification: NOAA quality controls the incoming data (e.g., error checking, interstation comparison), and the satellite data can be compared with the in situ data to help validate the data accuracy.

Comment: This measure assesses the correlation between forecasts of sea surface temperature (based on models) and actual sea surface temperature (based on satellite and in situ observations). Improvements in forecasting ability depend upon improved observations, models, and research. Forecasts will likely be better in El Niño years than in non-El Niño years.

Measure: U. S. temperature - skill score



Data Validation and Verification

Data source: Forecast data, observations from U.S. Weather Forecast Offices (WFO), and from a cooperative network maintained by volunteers across the Nation.

Frequency: Annual

Baseline: 1997: 22 skill score

Data storage: National Weather Service's National Centers for Environmental Prediction, Camp Springs, MD

Verification: NOAA performs quality assurance analysis of the data (e.g., error checking, elimination of duplicates, interstation comparison) both at the national and WFO level.

Comment: For those areas of the United States where a temperature forecast (i.e., warmer than normal, cooler than normal, normal) is made, this score measures how much better the prediction is than the random chance of being correct. Skill score is based on a scale of 50 to +100. If forecasters match what would be predicted by random chance, the skill score is 0. Anything above 0 shows positive skill in forecasting. Given the difficulty of making advance temperature and precipitation forecasts for specific locations, a skill score of 20 is considered quite good and means the forecast was correct in almost 50 percent of the locations forecasted. Forecasts will likely be better in El Niño years than in non-El Niño years.

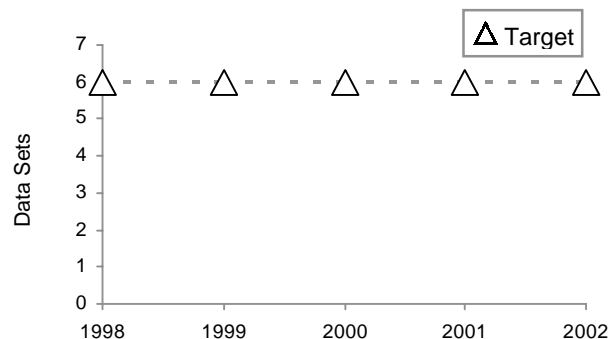
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Implement seasonal to interannual climate forecasts (cont.)

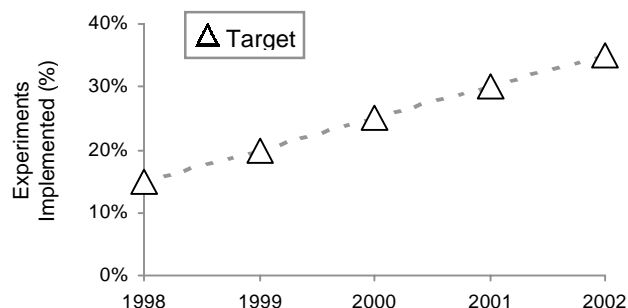


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Measure: New and improved data sets developed and produced (number per year)



Measure: Global Ocean-Atmosphere-Land System (GOALS) experiments implemented (%)



Data Validation and Verification

Data source: Satellite data sets from NOAA and Department of Defense environmental satellites, and in situ data sets worldwide from ships, buoys, aircraft, radiosondes.

Frequency: Annual

Baseline: 1997: 7 data sets

Data storage: National Environmental Satellite, Data, and Information Service's National Climatic Data Center in Asheville, NC, and Office of Satellite Data Processing and Distribution in Suitland, MD

Verification: NOAA performs quality control, including error checking, elimination of duplicates, and interstation comparison. In addition, for the satellite data, NOAA itself does the data processing.

Comment: In the future, the National Oceanographic Data Center and the National Geophysical Data Center may also contribute to this performance measure, if funding levels permit. Compilation of the in situ data sets, particularly the global data sets, relies on continued international data exchange cooperation.



Data Validation and Verification

Data source: Progress reports

Frequency: Annual

Baseline: 1997: 15 percent

Data storage: NOAA Office of

Global Programs, Silver Spring, MD
Progress is reported to NOAA management at Quarterly Reviews.

Verification:

Comment:

The Global Ocean-Atmosphere-Land System Program has been formulated to continue improvements in the prediction of ENSO, extend our understanding and predictive capability to include global seasonal-to-interannual climate variations, and develop the observational and computational means for predicting these variations. Should the program be prolonged due to, for example, unexpected research findings or fiscal constraints, the program could be extended and the percentage of the program completed could stall.

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Implement seasonal to interannual climate forecasts (cont.)



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Means and Strategies

Means or Activity	Strategy or Rationale
Implement climate predictions systems to deliver useful seasonal to interannual climate forecasts for the U.S. and collaborate in a multinational effort to generate and use similar forecasts.	The ability to forecast seasonal climate variability, including temperature and precipitation, provides enormous socio-economic benefits to the United States, including the protection of life and property.
Enhance global observing and data systems required to provide data for the initialization and validation of model predictions of seasonal to interannual climate variations.	Climate observations and data systems to analyze, distribute, and save this information are the crucial building blocks of our research and forecasting efforts.
Invest in process and modeling research that leads to improved predictability of temperature and rainfall distributions.	Research will help improve our understanding of El Niño and other modes of climate variability, resulting in better models and thus more accurate predictions with longer lead times.
Assess the impacts of climate variability on human activity and economic potential, and improve public education so that climate forecasts are understood and acted upon.	Discussion and assessments with various user communities will ensure that they understand and benefit from our climate forecasts; soliciting user input will help us create forecasts that are even more useful.

Crosscutting Activities

- NOAA works with a wide variety of partners in the area of climate forecasts, including other federal agencies (e.g., the *Federal Emergency Management Agency (FEMA)* and the *Agency for International Development*), state and local agencies (e.g., state departments of environmental protection and emergency preparedness managers), academia, foreign government agencies, and international organizations. In preparing for the 1997-1998 El Niño, NOAA worked closely with FEMA and state and local officials, greatly improving the preparedness of the public for the severe weather resulting from El Niño.

Program Evaluation Efforts

A number of NOAA Line Offices participate in the seasonal to interannual goal. The Office of Oceanic and Atmospheric Research conducts periodic reviews of the activities of its Environmental Research Laboratories. The National Environmental Satellite, Data, & Information Service holds management performance reviews several times per year. NOAA also holds constituent workshops at which NOAA's seasonal climate forecast efforts are discussed with the users of our data and products, and their input is solicited to help shape future efforts.

Resource Requirements



\$119 Million



538 FTEs

Skills: Meteorologists, Oceanographers, Physical Scientists, Atmospheric Scientists, Computer Specialists



IT Requirements:

- Satellite Active Archive: \$1.5M
- NOAA Virtual Data System: \$2.5M

National Oceanic and Atmospheric Administration

Predict and assess decadal to centennial change



- Natural Resources
- Natural Disaster Reduction

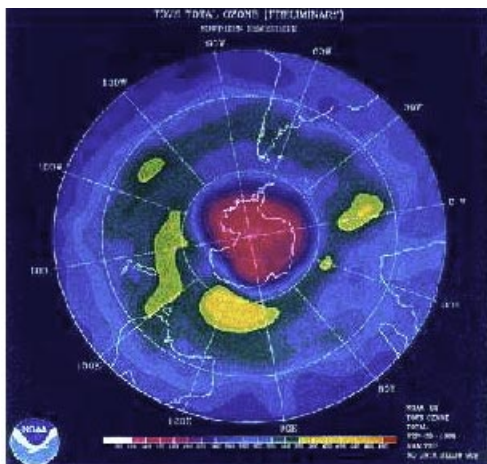
Rationale for/Comments on Performance Goal:

Policymakers require, and NOAA and its partners provide, science-based information for decisions regarding decadal to centennial changes in the global environment, specifically for: climate change and greenhouse warming; ozone layer depletion; and air quality improvement.

Measure: Document the “turnover” of CFC source gases (whose atmospheric abundance is expected to begin decreasing in 1998) in order to verify the effectiveness of global policy actions

— Documents on Turnover —

Year	1998	1999	2000	2001	2002
#	N/A	1	N/A	N/A	1



Data Validation and Verification

Data source: Research from NOAA/OAR/ERL/Aeronomy Laboratory

Frequency: Aperiodic (approximately every 3-5 years)

Baseline: A report every 3-5 years

Data storage: NOAA Aeronomy Laboratory, Boulder, CO

Verification: Data are taken using proven, peer-reviewed procedures. The results are also peer-reviewed by internationally qualified experts as part of the publication process.

Comment: Turnover of gases refers to the increase and decrease of specific gases in the atmosphere over time. Five years is the period generally used to expect reasonable progress in a field such that a new assessment or report could be justified. Those products take 2 ½ to 3 years to produce. The scientific assessments of the state of our understanding of the stratospheric ozone depletion are sponsored by NOAA, the National Air and Space Administration, the United Nations Environmental Program, and the World Meteorological Organization. They are undertaken every three to five years based on advancements in the science. The third assessment was published in 1994. The fourth is underway at this time.

National Oceanic and Atmospheric Administration

Predict and assess decadal to centennial change (cont.)



- Natural Resources
- Natural Disaster Reduction

Measure: Publish updated trend results of air quality measurements

— Number of Publications —

Year	1998	1999	2000	2001	2002
#	N/A	1	N/A	1	N/A

Data Validation and Verification

Data source: Research from NOAA/OAR/ERL/Air Resources Laboratory

Frequency: Biennial

Baseline: A report every 3-5 years

Data storage: NOAA/Air Resources Laboratory, Silver Spring, MD

Verification: Data are taken using proven, peer-reviewed procedures. The results are also peer-reviewed by internationally qualified experts as part of the publication process.

Comment: Five years is the period generally used to expect reasonable progress in a field such that a new assessment or report could be justified. Those products take two and a half to three years to produce.

Measure: Lead development of a peer-reviewed initial assessment of regional ozone in North America, including summarizing results for customers

— Assessments/Reports —

Year	1998	1999	2000	2001	2002
#	N/A	1	N/A	N/A	1

Data Validation and Verification

Data source: Research from NOAA/OAR/ERL/Aeronomy Laboratory

Frequency: Aperiodic (approximately every 3-5 years)

Baseline: A report every 3-5 years

Data storage: Research from NOAA/Aeronomy Laboratory, Boulder, CO

Verification: Data are taken using proven, peer-reviewed procedures. The results are also peer-reviewed by internationally qualified experts as part of the publication process.

Comment: Five years is the period generally used to expect reasonable progress in a field such that a new assessment or report could be justified. Those products take two and a half to three years to produce. The assessments conducted under the North American Research Strategy for Tropospheric Ozone are conducted on a three to five year interval determined by the scientific advancements that have occurred and the perceived requirements for updates to Congress, the Office of Science and Technology Policy, and the Committee on Environment and Natural Resources. The chart above represents the present assessment schedule.

National Oceanic and Atmospheric Administration

Predict and assess decadal to centennial change (cont.)



- Natural Resources
- Natural Disaster Reduction

Means and Strategies

<u>Means or Activity</u>	<u>Strategy or Rationale</u>
Characterize the agents and processes that force decadal to centennial change.	Natural events and human activities cause changes in climate. The atmospheric amounts of many greenhouse gases are increasing. This objective addresses understanding natural and man-induced greenhouse processes
Understand the role of the ocean as a reservoir of both heat and carbon dioxide to address a major source of uncertainty in climate models.	Research has highlighted the role of the oceans in climate change. Accurate simulations of the coupled air-sea system are essential for predicting and assessing climate variability.
Ensure a long-term climate record by enhancing domestic and international weather networks, observing procedures, and information management systems. Document present and past changes and variations in the climate system, including extreme events, and rapid climate changes, exploiting national and international observing networks, satellites, and paleoclimatic data.	A well-documented, long-term record of climate data is required to ascertain the sensitivity of the climate system to changes in atmospheric composition and the impact of climate change on socio-economic, biogeochemical, and physical systems.
Guide the rehabilitation of the ozone layer by providing the scientific basis for policy choices associated with ozone-depleting compounds and their replacements.	A better definition of which substitutes are the most "ozone friendly" will help our chemical industry avoid production of a substitute that later proves to destroy unacceptable amounts of ozone.
Provide the scientific basis for better air quality by improving the understanding of high surface ozone episodes in rural areas and by strengthening the monitoring network to detect cleaner air quality and improving the characterization of airborne fine particles.	Stations that detect air quality must be upgraded and maintained to provide the required information to achieve a more effective Clean Air Act implementation.
Develop models for the prediction of long-term climate change (including extreme events and rapid climate changes), carry out scientific assessments, and provide human impacts information.	Explanatory environmental models must be strengthened through better understanding of the atmospheric and oceanic processes to meet the challenges of understanding and foreseeing climate variability and long term changes.

National Oceanic and Atmospheric Administration

Predict and assess decadal to centennial change (cont.)



- Natural Resources
- Natural Disaster Reduction

Crosscutting Activities

- NOAA depends strongly on universities to help accomplish its science objectives through a network of *Joint and Cooperative Institutes* and Universities.
- NOAA also funds academic researchers through competitive, peer-reviewed programs, including the Global Climate Change Program.
- NOAA, in partnership with *ITA* within the Department of Commerce, other federal agencies, the private sector, and academia, is providing the foundation the U.S. will depend upon to lead new emerging global industries in economically and environmentally sustainable ways.

Resource Requirements



\$102 million



462 FTEs

Skills: Meteorologists, Instrumentation Engineers, Oceanographers, Instrumentation Technicians, Computer Scientists, Chemists, Physicists, Mathematicians, Electronic Engineers

Program Evaluation Efforts

- All NOAA Environmental Research Laboratories are reviewed on a regular basis. The Sea Grant Colleges are visited at least every two years by a review panel.
- The National Undersea Research Centers are visited annually and reviewed for certification on a six-year basis.
- All the external science supported by NOAA is openly solicited and competed and peer- and panel-reviewed. All principal investigators are encouraged to publish their results in the peer-reviewed literature.



IT Requirements:

- Geophysical Fluid Dynamics Laboratory (GFDL): \$5.7M

National Oceanic and Atmospheric Administration

Promote safe navigation

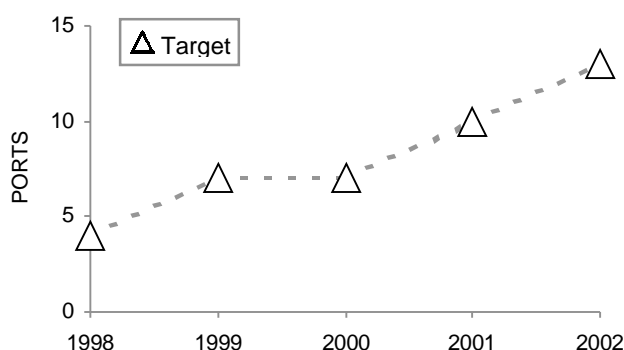


Natural
Resources

Rationale for/Comments on Performance Goal:

NOAA serves commercial and recreational mariners around the Nation by providing these customers with nautical charts, tides and currents data, and geographic positioning data for safe navigation. Geodetic services are vital to the broader mapping and surveying industry nationwide. Shoreline data and real-time tides and currents information also serve the coastal resource management and oil spill/disaster response communities. NOAA is currently exploring innovative ways to modernize its services in a cost-efficient manner to meet customer needs.

Measure: Number of Physical Oceanographic Real-Time Systems (PORTS) in place to provide quality-assured data in real-time for safe navigation



Data Validation and Verification

Target: Increase the # of PORTS by 3 each year

Data source: National Ocean Service/Ocean Products Service Center automated data base which tracks system operation and equipment upgrades.

Frequency: Ongoing, annual reporting

Baseline: From FY 1994.

Data storage: Automated database at National Ocean Service

Verification: National Ocean Service will apply standard verification and validation methods.

Comment: Severe weather can impact the water level stations, by knocking them off-line, affecting the accuracy of real-time data, or destroying them completely. This performance measure can be affected by maintenance schedules or the need to replace existing equipment. Annual targets include PORTS "Lite" which is a substantially smaller, single station system requiring less maintenance than a regular PORTS system which consists of as many as 26 stations (e.g., San Francisco).



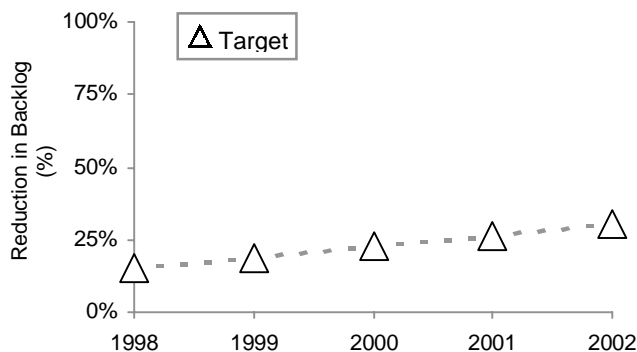
National Oceanic and Atmospheric Administration

Promote safe navigation (cont.)



Natural
Resources

Measure: Percent reduction in the backlog (square nautical miles) of hydrographic surveys for critical areas (cumulative)



Data Validation and Verification

Target:	4% annual reduction in backlog beginning in FY 2000
Data source:	Progress reports on data collected from hydrographic survey platforms.
Frequency:	Annual
Baseline:	From FY 1994.
Data storage:	National Ocean Service will store data and publish nautical charts.
Verification:	National Ocean Service will apply established verification and validation methods.
Comment:	Progress in reducing the backlog is measured against a baseline value of 43,000 square nautical miles as determined in 1994. Weather can affect scheduled surveys.

National Oceanic and Atmospheric Administration

Promote safe navigation (cont.)



Natural
Resources

Means and Strategies

Means or Activity	Strategy or Rationale
Provide mariners with predictions and observations of water levels, tides and currents, and weather conditions in ports.	Increased access to quality-assured tide, current, and positioning data, particularly in real-time, enables commercial mariners to navigate in and out of ports efficiently and with confidence that they will not run aground.
Update nautical surveys in order to accurately chart the depth of the sea floor and identify obstructions to navigation.	Hydrographic survey data forms the basis of NOAA's nautical charts. By reducing the backlog of surveys in critical areas, NOAA will be able to update charts for some of the Nation's busiest and most hazardous shipping areas.
Build, maintain, and deliver a digital nautical charting database.	Creating a nautical chart database allows NOAA to apply new data to nautical charts quickly and efficiently. It will also enable NOAA to deliver its products to customers in an electronic format that meets their needs.
Create a Global Positioning System (GPS) - based system of reference marks and stations that support the digital revolution in mapping, charting, and surveying.	Increasing reliance on GPS positioning for surveying and navigation requires an accurate national spatial reference system. The ability of GPS to accurately measure heights is particularly important to marine surveying and navigation.
Map the national shoreline.	Accurate shoreline data is a critical component of nautical charts.

Crosscutting Activities

- NOAA works closely with the U.S. Coast Guard, the U.S. Army Corps of Engineers, local port authorities, state coastal zone management agencies, state oil-spill response organizations, and others while creating a context for new partnerships with the private sector. The U.S. Army Corps of Engineers provides crucial data pertaining to navigation channels approaching the Nation's ports and harbors. The U.S. Coast Guard, in its national waterways management initiative, is depending on NOAA to successfully deliver the suite

of navigation services which would result from a balanced investment in the programmatic components of the Promote Safe Navigation goal. Providing this suite of services is NOAA's responsibility as the agency works to promote safe navigation. These products and services include real-time and forecast tide and current information, and a range of electronic chart products from raster to vector. These products and services support the Coast Guard's national waterways management program, and are also used by the public and private sectors.

National Oceanic and Atmospheric Administration

Promote safe navigation (cont.)



Natural
Resources

Program Evaluation Efforts

- A number of Marine Board studies (listed below) were carried out between 1992 and 1996 to evaluate the nautical charting program and its transition into the digital era. Study recommendations have been incorporated into the program and their successful implementation is being monitored through existing performance measures. Particularly important are the recommendations for reducing the survey backlog, implementing new digital production techniques, and delivering new electronic chart products. Another important recommendation urged the program to make substantial use of contract support for all aspects of the program. In FY 1995, contracting was less than 5% of the program activities. In FY 1998, contract support for the program will approach \$20M - about half of the program's annual appropriation.

Marine Board Studies:

Charting a Course into the Digital Era - Guidance for NOAA's Nautical Charting Mission. Marine Board, 1994. National Academy Press. Washington, D.C.

ANCS II Study, Marine Board, January 1996.

A Performance-Based Organization for Nautical Charting and Geodesy. June 1996. National Academy of Public Administration. Washington, D.C.

- The National Academy of Public Administration examined all of the programmatic components of Promote Safe Navigation to determine if they could be converted into a Performance-Based Organization. The result of the study found that these essential programs would not survive on product receipts.

Resource Requirements



\$95 million



807 FTEs

Skills: Meteorologists, Cartographers, Photogrammetists, Hydrologists, Geodesists, Hydrographers, Oceanographers, Physical Scientists, Engineers, Computer Scientists, Aerial Photographers



IT Requirements:

- Nautical Charting and Surveying System: \$33.3M
- *Physical Oceanographic Real-Time Systems (PORTS) and *Data Processing and Analysis Subsystem (DPAS) for National Water Level Observation Network: \$14.9M
- Geodetic Support System: \$19.8M

*PORTS and DPAS are appropriated together through the "Tide and Current Data" line item of the NOAA budget.

National Oceanic and Atmospheric Administration

Build sustainable fisheries

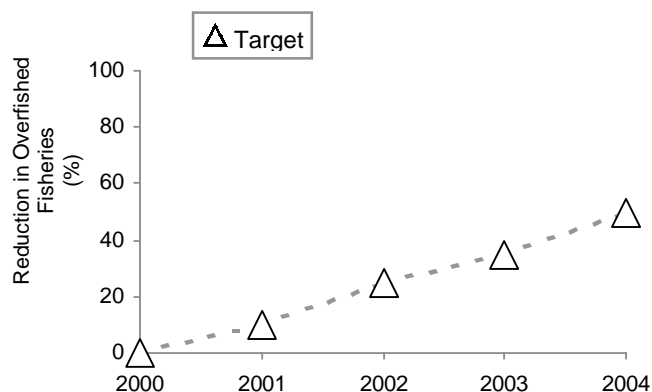


Natural
Resources

Rationale for/Comments on Performance Goal:

Billions of dollars in economic growth, thousands of jobs, and countless recreational fishing opportunities are wasted as a result of overfishing and overcapitalization in commercial and recreational fisheries. While many fisheries are well managed and produce positive benefits, others are severely depleted or overcapitalized, and must be restored and managed to realize their long-term potential. Rebuilding and reducing overcapitalization in existing fisheries will promote the economic and biological sustainability of U.S. fishing resources. Building sustainable fisheries will increase greatly the Nation's wealth and quality of life.

Measure: By 2004, 50% fewer overfished fisheries (Currently 86 of 286 stocks are overfished. This would be reduced to 43.)



Data Validation and Verification

Data source: NOAA/ National Marine Fisheries Service (NMFS) Report to Congress: Status of Fisheries of the United States

Frequency: Annual

Baseline: See below

Data storage: NOAA/NMFS Office of Sustainable Fisheries

Verification: Stock assessments and peer-reviews (internal and outside the agency)

Comment: The reauthorization of the Magnuson-Stevens Sustainable Fisheries Act of 1996 requires that overfishing be eliminated in ten years. A period of two years has been provided to amend the Fisheries Management Plans of affected overfished stocks to reflect the new law. The 50% goal means that the currently 86 overfished fisheries will be reduced to 43 or less by 2004. External factors that may affect NOAA's ability to reach this target include the impact of climate and other natural conditions, such as El Niño, on biological stocks.

National Oceanic and Atmospheric Administration

Build sustainable fisheries (cont.)



Natural
Resources

Measure: By 2004, 60% of stocks have sufficient essential fish habitat

— Stocks With Essential Fish Habitat —

Year	1998	1999	2000	2001	2002
%	N/A	N/A	50	52	54

Data Validation and Verification

Data source: Regional offices of NOAA/NMFS
Frequency: Annual
Baseline: See below.
Data storage: Regional Office of NOAA/NMFS
Verification: Inter-agency and internal peer-review.
Comment: The reauthorization of the Magnuson-Stevens Sustainable Fisheries Act of 1996 requires NMFS to identify, protect, and restore essential fish habitats. A period of two years has been provided to amend the affected Fisheries Management Plans to reflect the new law. Regulations have been promulgated to define "essential fish habitat," and Regional Fisheries Management Councils, as key stakeholders, have participated extensively in this regulatory process. External factors that may affect NOAA's ability to reach this target include the impact of biological and other natural conditions.



Measure: By 2004, 10% increase in employment in non-capture fishing and other sectors in fishing communities

— Increase in Employment —

(in non-capture fishing and other sectors
in fishing communities)

Year	1998	1999	2000	2001	2002
%	N/A	0%	0%	0%	5%

Data Validation and Verification

Data source: U.S. Department of Commerce/Bureau of Economic Analysis
Frequency: Annual
Baseline: See below.
Data storage: U.S. Department of Commerce/Bureau of Economic Analysis
Verification: BEA has been consulted and may provide the information and verification.
Comment: NMFS has approached the Bureau of Economic Analysis to provide the information starting with 1999 figures. External factors that may affect NOAA's ability to reach this target include impact of national and/or local economic conditions. Non-capture fishing is aquaculture.

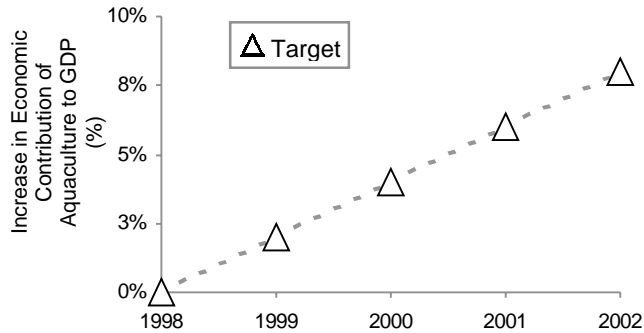
National Oceanic and Atmospheric Administration

Build sustainable fisheries (cont.)



Natural
Resources

Measure: By 2004, 20% increase in economic contribution of aquaculture to Gross Domestic Product (GDP)



Data Validation and Verification

Data source: NOAA/NMFS, BEA, U.S. Department of Agriculture

Frequency: Annual

Baseline: BEA has been consulted and may provide GDP estimates beginning with 1999 figures.

Data storage: BEA

Verification: BEA has been consulted and may provide information and verification.

Comment: BEA will serve as a satellite account. Aquaculture is defined as marine aquaculture, including the Great Lakes. External factors that may affect NOAA's ability to reach this target include the impact of national and/or local economic conditions.

Means and Strategies

Means or Activity	Strategy or Rationale
Eliminate and prevent overfishing and overcapitalization.	As evidenced by the Sustainable Fisheries Act amendments, there is a strong consensus among lawmakers, fishery managers, the fishing industry, and the public that depleted fishery resources must be restored and healthy fisheries must be maintained and managed for greater efficiency.
Attain economic sustainability in fishing communities.	The rebuilding of overfished fisheries required under the Magnuson-Stevens Act will result in lower harvest levels, and therefore fewer fishing vessels and fishing-related jobs, and potentially an overall reduction in economic activity in many coastal communities. To minimize the economic impact of fisheries management decisions on communities, NOAA is working with other Federal, state, and local agencies to address these impacts on fishing communities through a variety of programs including loans, retraining, vessel and permit buyouts, and community planning.
Develop environmentally and economically sound marine aquaculture.	Sound marine aquaculture will enhance the Nation's ability to meet the growing domestic and global demand for seafood, as a growing number of wild stocks are overfished or fully utilized.

National Oceanic and Atmospheric Administration

Build sustainable fisheries (cont.)



Natural
Resources

Crosscutting Activities

- NOAA will focus on reducing overfishing and overcapitalization of U.S. fishery resources by improving stock assessment and prediction, improving essential fisheries habitat, and reducing fishing pressure, including downsizing of fishing fleets. The Department of Commerce, enlisting the support of key bureaus such as EDA, MBDA, and NIST, and other federal agencies, such as the U.S. Department of Agriculture, Small Business Administration, and the U.S. Department of Labor, will play a key role in mitigating the impact of these critical resource conservation decisions in the transition to economically sustainable communities.

External Factors

- Impact of national and/or economic conditions.

Program Evaluation Efforts

- Virtually every aspect of the National Marine Fisheries Service fisheries science program is peer-reviewed, either internally within NMFS or outside the agency, e.g., the National Academy of Sciences of the National Research Council and the National Science Foundation. NMFS also relies on extensive informal networks of university partnerships and laboratories throughout the Nation. Moreover, reviews often occur by opposing parties' scientists in the court system when fisheries management decisions are litigated.

Resource Requirements



\$324 million



1,661 FTEs

Skills: Fishery Biologists, Fishery Economists



IT Requirements:

- *National Marine Fisheries Service Fishing Information Technology System: \$25.3M

* NMFS Fishing Information Technology System provides information that is used to meet the data needs of the Build Sustainable Fisheries and Recover Protected Species teams.

National Oceanic and Atmospheric Administration

Recover protected species

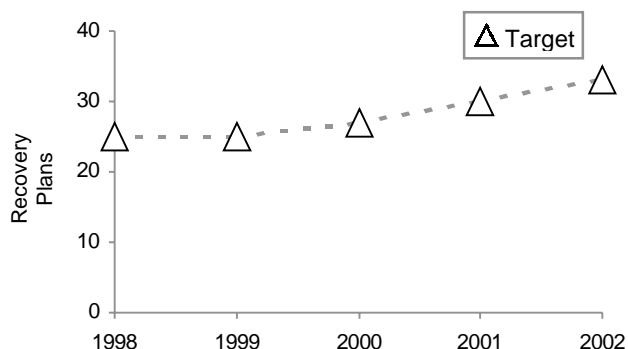


Natural
Resources

Rationale for/Comments on Performance Goal:

NOAA's overall objectives for recovering protected species are to prevent the extinction of protected species and to maintain the status of healthy species. NOAA measures its performance in meeting these objectives by focusing on the agency's ability to manage protected species through conservation programs and recovery plans, and through constant monitoring and research regarding the status of species and the stresses that affect their mortality.

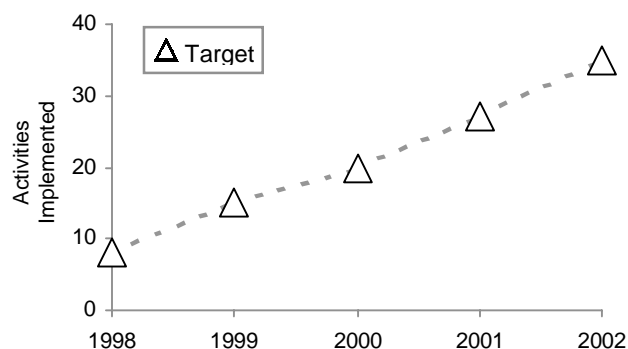
Measure: Number of recovery plans developed (cumulative)



Data Validation and Verification

Data Source: NMFS
Frequency: Annual
Baseline: Annual progress is measured compared to the previous year.
Data storage: NMFS Office of Protected Resources
Verification: Audits and regular communication between field and headquarter offices regarding the status of recovery plans.
Comment: Recovery plans for listed marine species, including Pacific salmon, are developed and implemented under the Endangered Species Act.

Measure: Number of recovery plans priority activities implemented (annual)



Data Validation and Verification

Data source: NMFS
Frequency: Annual
Baseline: Annual progress is measured compared to the previous year.
Data storage: NMFS Office of Protected Resources
Verification: Audits. Internal peer-review within NOAA and external peer-review by regional fishery councils, the National Science Foundation, the National Academy of Sciences, and other organizations.
Comment: Lowering mortality for marine species requires reducing incidental and direct takes, improving species habitat, decreasing negative interactions, and mitigating the effects of natural phenomena.

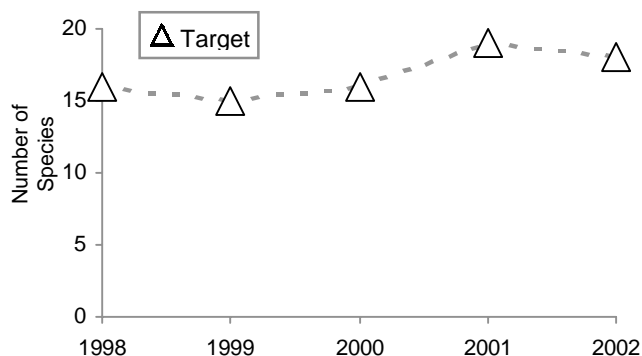
National Oceanic and Atmospheric Administration

Recover protected species (cont.)

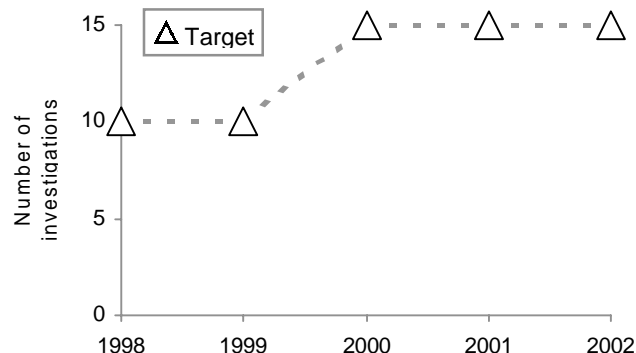


Natural
Resources

Measure: Number of species with status improved (annual)



Measure: Number of investigations of human-induced and other sources of mortality (annual)



Data Validation and Verification

Data source: NMFS
Frequency: Annual
Baseline: Annual progress is measured compared to the previous year.
Data storage: NMFS Office of Protected Resources
Verification: Audits. Internal peer-review within NOAA and external peer-review by regional fishery councils, the National Science Foundation, the National Academy of Sciences, and other organizations.

Comment: Recovery plan activities are implemented through cooperative partnerships with other federal agencies, state, local, and tribal governments, and organizations including the National Fish and Wildlife Foundation.

Data Validation and Verification

Data source: NMFS
Frequency: Annual
Baseline: Annual progress is measured compared to the previous year.
Data storage: NMFS Office of Protected Resources
Verification: Audits. Internal peer-review within NOAA and external peer-review by regional fishery councils, the National Science Foundation, the National Academy of Sciences, and other organizations.

Comment: Lowering mortality for marine species requires the reduction of incidental and direct takes, improving species habitat, decreasing negative interactions, and mitigating the effects of natural phenomena.



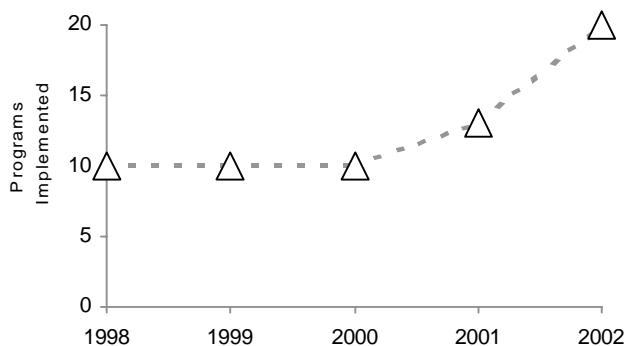
National Oceanic and Atmospheric Administration

Recover protected species (cont.)



Natural
Resources

Measure: Cooperative conservation programs implemented (cumulative)



New Performance Measures

NOAA is currently revising the performance measures for Recover Protected Species as it transitions to new measures which will be used beginning in FY 2000. Through ongoing NMFS scientific research and workshops, quantitative measures are being developed which will establish the baseline from which program performance will be measured. Recover Protected Species performance will be measured by the results of NOAA's efforts to reduce the risk of extinction of protected species. The new performance measures will focus on reducing the probability of extinction for protected and candidate marine species, lowering mortality rates of marine stocks incidental to commercial fishing, and protecting and restoring priority biodiversity areas. Extensive consultation and input with the science community is being planned to assist NMFS in the development of the statistical models necessary to establish performance baselines.

Data Validation and Verification

Data source:	Cooperative agreements, Memoranda of Understanding and Memoranda of Agreement, between NMFS and other involved parties submitted to NOAA.
Frequency:	Annual
Baseline:	Annual progress is measured compared to the previous year.
Data storage:	NMFS Office of Protected Resources
Verification:	Audits and communication with each party involved in a cooperative conservation program.
Comment:	NOAA partners with public and private entities to implement conservation programs.

National Oceanic and Atmospheric Administration

Recover protected species (cont.)



Natural
Resources

Means and Strategies

Means or Activity	Strategy or Rationale
Prevent extinction of protected species.	Marine resources contribute billions of dollars to the Nation's economy. However, many commercial and recreational activities contribute to stress on marine species and ecosystems, threatening their survival.
Maintain the status of healthy species.	Many populations of marine species are depleted or declining due to human activity, environmental variation, and other causes. Recovering protected species, and avoiding the further decline of others, will contribute to the improved overall health and understanding of marine ecosystems. Improved science will lead to better long-term conservation and management strategies.

Crosscutting Activities

- Over the past year, NOAA has developed innovative partnerships with the states of Maine, Washington, Oregon, and California to promote the recovery of listed and at-risk salmon and steelhead species. This approach has enabled NOAA to address a high-profile Presidential and Departmental priority in the most efficient, least disruptive way possible, limiting the number of listings while empowering state, local, tribal, and private partners with greater responsibility for the protection and recovery of these valuable species.

External Factors

- The impact of climate, biological, and other natural conditions affect NOAA's efforts to recover protected species and maintain the status of healthy species.

Program Evaluation Efforts

Evaluation efforts include peer-reviews of proposals, internal and external reviews of programs, and quarterly reviews of NOAA's overall performance in protected species recovery. Constituent input is an important part of the evaluation process and is solicited regularly through constituent workshops.

Resource Requirements



\$104 Million



676 FTEs

Skills: Fishery Biologists, Ecologists



IT Requirements:

- * National Marine Fisheries Service Fishing Information Technology System: \$25.3M

*NMFS Fishing Information Technology System provides information that is used to meet the data needs of the Recover Protected Species and Build Sustainable Fisheries teams.

National Oceanic and Atmospheric Administration

Sustain healthy coasts



Natural
Resources

Rationale for/Comments on Performance Goal:

Sustain Healthy Coasts is the most complex of the seven goals of NOAA's Strategic Plan, integrating activities across five of NOAA's six line and program offices – the National Ocean Service, the Office of Oceanic and Atmospheric Research (OAR), the National Marine Fisheries Service, the National Environmental Satellite, Data and Information Service, and the Office of Global Programs. The Sustain Healthy Coasts program is successful if coastal habitats and biodiversity are protected and restored, coastal water quality is improved and sustained, and coastal communities are planned, developed, and revitalized in sustainable ways.

Measure: *Number of U.S. coastal regions with reduced introductions and impacts of nonindigenous species (total of 6 regions)*

Data Validation and Verification

Target : Reduced impacts in at least one region per year.

Data source: NOAA Office of Oceanic and Atmospheric Research, U.S. Department of the Interior, and state agencies.

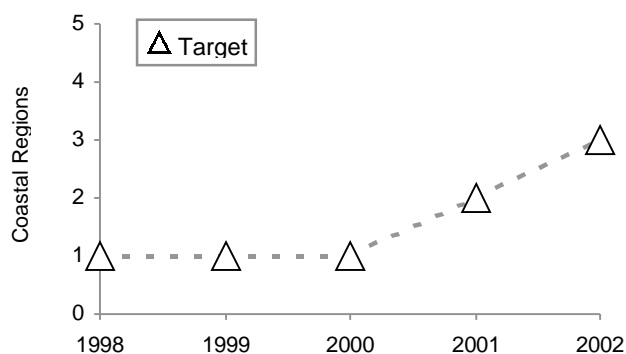
Frequency: Annual

Baseline: FY 1996 = 1

Data storage: OAR will collect data, conduct assessments and store data

Verification: Original research data verified through peer-review; OAR will obtain quality control data from other sources to ensure criteria are being met for inclusion in performance calculations.

Comment: Reaching these targets will also depend on activities of other federal and state agencies with management responsibilities in this area.



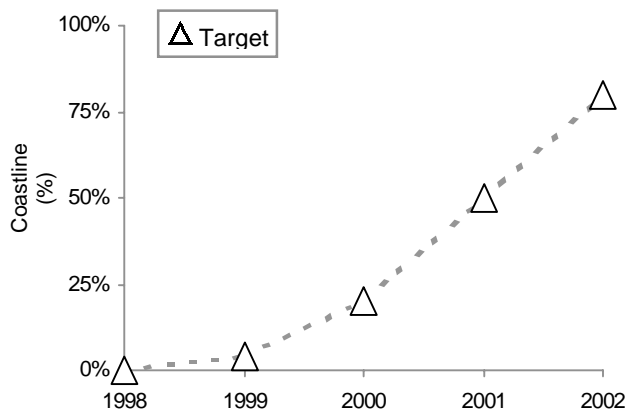
National Oceanic and Atmospheric Administration

Sustain healthy coasts (cont.)



Natural
Resources

Measure: Percent of U.S. coastline with threats to habitat assessed and ranked



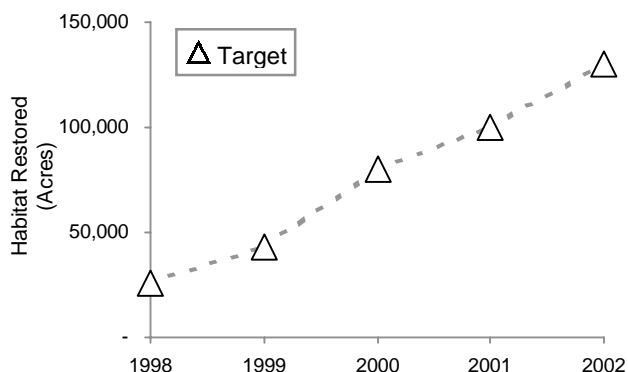
Data Validation and Verification

Data source: National Marine Fisheries Service, Office of Habitat Conservation
Frequency: Annual
Baseline: FY 1998 > 0
Data storage: NMFS/Habitat Office will collect information, conduct assessments, and store data.
Verification: NMFS/Habitat Office will collect quality control data to ensure criteria are being met by data used to calculate performance.

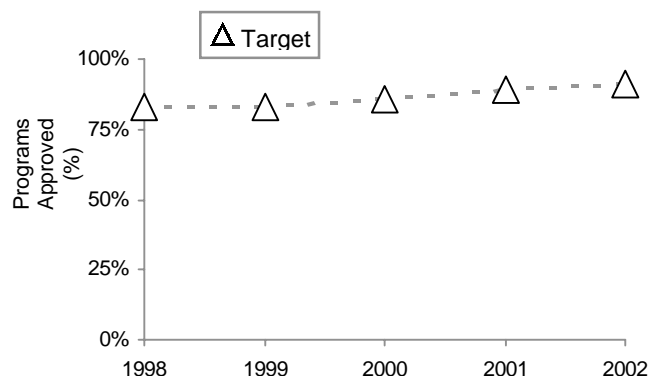
Data Validation and Verification

Data source: Primary source is National Marine Fisheries Service, Office of Habitat Conservation. Other input from National Ocean Service.
Frequency: Annual
Baseline: FY 1994
Data storage: NMFS/Habitat Office will collect information, conduct assessments, and store data.
Verification: NMFS/Habitat Office will collect quality control data to ensure criteria are being met by data used to calculate performance.

Measure: Number of acres of coastal habitat restored (cumulative)



Measure: Percent state coastal nonpoint pollution control programs approved (% of 35 coastal states)



Data Validation and Verification

Data source: National Ocean Service, Office of Ocean and Coastal Resource Management (OCRM)
Frequency: Annual
Baseline: FY 1996 = 0
Data storage: OCRM will collect information, conduct assessments, and store data.
Verification: OCRM will verify information from states through formal review and approval of state plans.

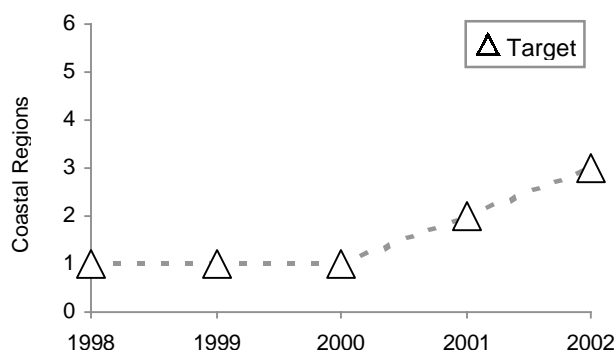
National Oceanic and Atmospheric Administration

Sustain healthy coasts (cont.)

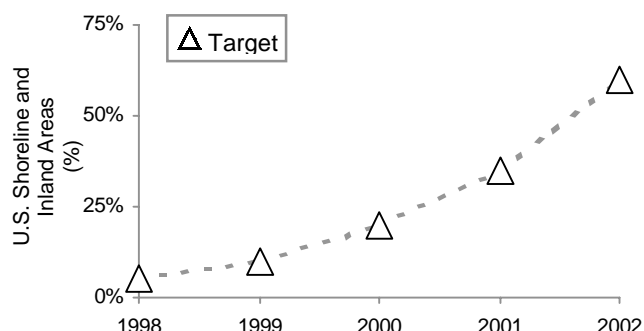


Natural
Resources

Measure: Number of U.S. coastal regions with systems to predict and reduce impacts of harmful algal blooms (total of 6)



Measure: Percent of U.S. shoreline and inland areas with improved ability to identify extent and severity of coastal hazards



Data Validation and Verification

Data source: National Ocean Service, other federal and state agencies.

Frequency: Annual

Baseline: FY 1998 = 0

Data storage: NOS will collect information, conduct assessments, and store data.

Verification: Verification includes peer-review of research and testing of models used in the prediction systems.

Comment: Accuracy and content of predictions will depend on information and activities of other federal and state agencies with responsibilities in this area.

Data Validation and Verification

Data source: National Ocean Service, other federal and state agencies.

Frequency: Annual

Baseline: FY 1998

Data storage: NOS will collect information, conduct assessments, and store data.

Verification: All data used in coastal hazard risk assessments is quality controlled; risk assessment models are tested for accuracy and coverage (amount of shore line covered).

Comment: This measure tracks development and implementation of "coastal hazard risk atlases" as an indicator of improved ability to identify the extent and severity of coastal hazards. Reaching these targets will also depend on activities of other federal and state agencies with management responsibilities in this area.

National Oceanic and Atmospheric Administration

Sustain healthy coasts (cont.)



Natural
Resources

Means and Strategies

<u>Means or Activity</u>	<u>Strategy or Rationale</u>
Protect, conserve, and restore coastal habitats and their biodiversity.	Coastal habitats produce many of the Nation's commercial and recreational fisheries. They also are the foundation for most coastal tourism and recreation industries that contribute over \$58 billion annually to the U.S. economy. Protecting and restoring coastal habitats and their biodiversity is an investment in the long-term sustainability of the Nation's coastal resources and the communities and economies that depend on them.
Promote clean coastal waters to sustain living marine resources and ensure safe recreation, healthy seafood, and economic vitality.	Clean water is essential for productive coastal ecosystems and sustainable coastal communities. Contaminated coastal waters threaten living resources, human health, and economic stability. The primary source of coastal water pollution is run-off from urban and agricultural areas that washes nutrients and other contaminants into coastal waters.
Foster well-planned and revitalized coastal communities that sustain coastal economies, are compatible with the natural environment, minimize the risks from nature's hazards, and provide access to coastal resources for public use and enjoyment.	The U.S. economy is increasingly dependent on coastal resources. One in every six jobs is marine-related and one-third of the Nation's gross domestic product is produced in coastal areas through fishing, tourism, recreation, and other industries. These industries depend on healthy coastal resources to survive. Effective planning and revitalization of coastal communities is essential to sustainable management of both natural areas and the coastal communities that depend on them.

National Oceanic and Atmospheric Administration

Sustain healthy coasts (cont.)



Natural
Resources

Crosscutting Activities

- NOAA has leveraged its resources through a variety of effective international, interagency, state, local, private-sector, and other partnerships to develop world-class coastal stewardship capabilities. These partnerships are essential to effectively integrate coastal science, assessment, monitoring, education, and management activities.
- In FY 2000, for example, SHC will work with other federal agencies, states, and academic partners to initiate new research necessary to sustainably manage the Nation's coastal ecosystems. This research will provide managers and decision-makers with information, solutions, and technologies as part of an interagency initiative developed by the *National Science and Technology Council's Committee on Environment and Natural Resources*.
- Through SHC, NOAA provides technical and scientific assistance to a variety of partners involved in protection, monitoring, and restoration of coastal resources. For example, NOAA provides critical information to the U.S. Coast Guard to help the Coast Guard respond to approximately 70 serious oil and chemical spills every year. Through SHC, NOAA is also working closely with other agencies, DOC bureaus, states, local governments, and industry on important crosscutting activities such as reducing the risks and impacts of natural hazards, protecting and restoring essential fish habitats, reducing run-off pollution, forecasting and preventing harmful algal blooms, and exploring the deep ocean and new uses of the ocean's rich biodiversity.

Program Evaluation Efforts

NOAA's goal to sustain healthy coasts is the product of over 25 years of experience helping to understand and manage coastal resources so that their ecological and economic productivity can be fully realized and sustained. Evaluation efforts exist at a variety of levels, from peer-reviews of proposals and evaluations of individual projects, to internal and external reviews of entire programs and quarterly reviews of NOAA's overall performance in coastal stewardship areas. Constituent input is an important part of the evaluation process and is solicited regularly through constituent workshops.

Resource Requirements



\$218 Million



608 FTEs

Skills: Marine Ecologists, Fisheries Biologists, Environmental Educators, Land Use Planners, Toxicologists, Chemists, Engineers, Oceanographers



IT Requirements: Requirements are met through different NOAA Line Office technologies. Sustain Healthy Coasts does not rely on any one major IT system.